

## **Remarks**

Claims 75-90 are pending in the application. Claims 75-82 stand rejected, and claims 83-90 have been withdrawn from consideration. Claims 75-82 and 84-90 have been amended. No new claims have been added. Applicant submits that no new matter has been added to the Application by the present Amendment. Applicant respectfully requests reexamination and reconsideration of the case, as amended.

### **I. Election/Restriction**

Applicant confirms the election of Group I (claims 75-82), drawn to a chemical testing apparatus. The Examiner has also requested that a type of probe compound be elected for search purposes. Applicant elects as the type of probe compound peptides as recited in claim 76. Applicant respectfully submits that the species election is for search purposes only.

### **II. Claim Objections**

Applicant has renumbered the claims as requested by the Examiner. Claims 83-98 have been renumbered as claims 75-90, and the dependencies have been amended accordingly.

### **III. Rejections under 35 U.S.C. § 112, first paragraph**

The Examiner has rejected claims 75-82 under 35 U.S.C. § 112, first paragraph, as failing to comply with the written description requirement. The Examiner maintains that the claims contain subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventors, at the time the application was filed, had possession of the claimed invention.

In particular, the Examiner states that the terms “substantially one-dimensional support” and “predetermined pattern” are not specifically supported by the specification as originally filed. Applicant disagrees. With regard to the term “substantially one-dimensional support,” although the exact phrase “substantially one-dimensional support” is not used in the specification, the term linear is used again and again to describe the array of compounds on an optical fiber. These two terms have the same meaning; therefore, support for “substantially one-

dimensional support” can be found in the originally filed specification as would be appreciated by one of ordinary skill in the art reading the application. In fact, the whole focus of this continuation-in-part application and the parent application is that molecules are arranged along a one-dimensional support such as a string or optical fiber. There is ample support throughout the specification regarding the linear arrangement of agents along an optical fiber as is recited in the claim. For example, support can be found on page 3, line 14; page 3, lines 28-29; original claim 17; original claim 19; original claim 28; and Figures 2-4, 7, 8, 12, 13, and 14. However, solely in order to further prosecution, Applicant has amended claim 75 to recite a “linear support” which does find explicit support in the specification as originally filed. Applicant, therefore, requests that the rejection be removed.

The Examiner has also objected to the term “predetermined pattern” as constituting new matter. Applicant disagrees. One of ordinary skill in the art reading the originally filed specification would understand that the compounds attached to the optical fiber must be arranged in a predetermined pattern in order for the whole system to be useful. The arraying of the compounds in a predetermined pattern allows for the assaying of the attached compounds using light as described in the first paragraph of the “Summary of the Invention” (page 3, lines 19-27). Therefore, Applicant respectfully submits that the term “predetermined pattern” does not constitute new matter and requests that the rejection be removed.

#### **IV. Rejections under 35 U.S.C. § 112, second paragraph**

The Examiner has rejected claims 75-82 under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicant regards as the invention.

The Examiner maintains that the term “substantially one-dimensional support” renders the claim indefinite. The Examiner’s rejection is rendered moot by the present Amendment. Applicant submits that the term “linear support” in amended claim 75 is definite and clear.

The Examiner has also objected to the language “to interact with multiple different probe molecules” in claim 78. The Examiner maintains that “it is unclear as to what does the interacting.” Applicant has amended claim 78 to recite “probe compounds” instead of “probe

molecules” so that the terminology of dependent claim 78 is consistent with the terminology of claims 75 and 77. Applicant believes this may have been the source of the Examiner’s confusion. Applicant respectfully submits that it is clear from the amended claim 78 that light from the light source is interacting with probe compounds attached to the optical fiber. Applicant requests that the rejection be removed.

The Examiner has also rejected claim 80 because of the phrase “predetermined spatial pattern.” The Examiner states that the usage of such language reads upon a mental step. The Examiner goes on to state that it is “unclear as to who or what has ‘preselected’ the peptide fragment.” This is not correct. The term “predetermined spatial period” does not read upon a mental step. It refers to the pattern of how the probe compounds have been attached to the optical fiber. Therefore, it refers to a structural limitation of the claimed product. Applicant submits that claim 80 is not indefinite and requests that the rejection be removed.

Claims 81 and 82 have been amended rendering the Examiner’s rejections moot. Applicant requests that the rejections be removed.

## V. Rejections under 35 U.S.C. § 102

Claims 75, 76, and 80 were rejected by the Examiner under 35 U.S.C. § 102(e) as being anticipated by Stimpson, U.S. Patent 6,037,186. Examiner states that Stimpson discloses combinatorial peptide compounds and combinatorial libraries and that these compounds and libraries form arrays of protein compounds immobilized as lines on microporous materials that are glass or other materials. These materials are then rolled into rods or bundles that encompass optical fibers because they are capable of transmitting or guiding light. Stimpson does not anticipate the claimed invention because Stimpson does not teach all the limitations of the claimed invention. In particular, Stimpson does not teach a single optical fiber with multiple probe compounds arrayed linearly along the fiber.

In order for a rejection under § 102 to be proper, the cited art must clearly and unequivocally disclose the claimed invention. *In re Arkley*, 455 F.2d 586, 587 (CCPA 1972). In other words, a “claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference.” MPEP § 2131.

Applicants submit that Stimpson fails to clearly and unequivocally disclose the claimed invention.

The claimed invention is a linear array of a plurality of different probe compounds along an optical fiber. In order for Stimpson to anticipate the claimed invention, Stimpson must teach all elements of the claimed invention. Stimpson fails to teach or disclose several aspects of the claimed invention. Stimpson describes two-dimensional arrays (col. 3, line 36-37), not one-dimensional arrays. In column 4, lines 5-7, Stimpson clearly indicates that the rod is exposed to the compound “to allow uniform attachment throughout its length (Z axis).” The rod has bound to it one binding agent, not a plurality of probe compounds from a combinatorial library, as claimed in the present application. It is clear from Stimpson’s disclosure that Stimpson does not teach multiple probe compounds on a single optical fiber. Stimpson’s invention is instead focused on the production of multiple copies of a two-dimensional array by cutting slices of a bundle of multiple rods perpendicular to the Z-axis of the bundle (col. 4, lines 30-31). Stimpson does not teach the attachment of a combinatorial library of probe compounds in a linear fashion along a single optical fiber; therefore, Stimpson does not anticipate the claimed invention. Applicant requests that the rejection be removed given the substantial difference between the claimed invention and the disclosure of Stimpson.

## VI. Rejections under 35 U.S.C. § 103

Claims 75-81 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Browne *et al.* (*Anal. Chem.* 1996) and Pirrung *et al.* (U.S. Patent 5,143,854).

Browne *et al.* describe a sol-gel clad fiber optic waveguide in which various dyes have been introduced as dopants. The Examiner asserts that these dyes are different chemical compounds arrayed on the fiber in linear organization. However, the dyes are not members of a combinatorial library as claimed in the present Application. Given this deficiency in Browne, it alone cannot render obvious the claimed invention.

The Examiner has cited Browne *et al.* in combination with Pirrung *et al.* and asserts that Pirrung teaches polypeptide arrays. However, there is no teaching or suggestion to combine these two references as required to establish a *prima facie* case of obviousness. Pirrung states

explicitly that the “synthesis may take place on the end of a series of optical fibers to which light is selectively applied.” U.S. Patent 5,143,854, col. 14, lines 55-57. There is no teaching or suggestion that peptides may be attached along the length of an optical fiber as claimed and as taught in Browne *et al.* In fact, Pirrung *et al.* teaches away from what is claimed and what is described in Browne *et al.* because only one compound is attached to the end of an optical fiber in Pirrung *et al.* Pirrung *et al.* does not even suggest placing more than one compound on a particular optical fiber. The Examiner provides no evidence to suggest how these two teachings, particularly the strong difference between the two, might be combined to render obvious the claimed invention. Therefore, the Examiner has not established a *prima facie* case, and Applicant request that the rejection be removed.

Claims 75-81 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Browne *et al.* (*Anal. Chem.* 1996) and Adams *et al.* (U.S. Patent 6,156,494). Browne *et al.* has been discussed above. Adams *et al.* has been cited by the Examiner for teaching “a combinatorial library of probe compounds attached to optical fiber.” Adams *et al.*, however, only teaches one compound per optical fiber because “region,” which is where the compounds are attached, is defined in the specification of Adams *et al.* as at least one optical fiber. This is clearly illustrated in the figures of the patent where each optical fiber is an individually addressable fiber element. Also, claims 18-21 address this point wherein at least 10, 50, 100, or 1,000 optical fibers comprise the first region.

Given the difference between Browne and Adams regarding how the compounds are attached to an optical fiber, there is no motivation to combine these references. In fact, these two references seem to teach opposite ways of attaching the compounds to optical fiber(s). Browne *et al.* teaches multiple compounds per fiber; Adams *et al.* teaches a single compound per fiber. The Examiner states that one of ordinary skill in the art would have been motivated to have attached probe compound from a combinatorial library to an optical fiber because Adams teaches the use of electromagnetic energy such as light for screening library compounds for desirable properties. However, the Examiner has provided no explanation to reconcile the differences in the two references, specifically, one compound per optical fiber versus multiple compounds per optical fiber). Since there is no teaching or suggestion to combine Browne and Adams, the

Examiner has not made out a *prima facie* case of obviousness, and Applicant requests that the rejection be removed.

The Examiner has also rejected claim 82, which further recites including a means for Fourier analysis, as being unpatentable over each of the above combinations further in view of Grow *et al.*, U.S. Patent 6,040,191. The combinations of Browne and Pirrung, and Browne and Adams have been discussed above, and as the Examiner admits neither combination teaches a means for Fourier analysis.

As discussed above, neither the combination of Browne and Pirrung nor the combination of Browne and Adams renders obvious the claimed inventions of claims 75-81. Therefore, the combination with Grow cannot render the invention of claim 82.

The Examiner cites Grow for teaching a means for Fourier transform analysis. Grow only mentions a Fourier transform system in a laundry list of Raman spectroscopic techniques both in the specification at column 22 and in claim 8. Nowhere does Grow specifically teach that Fourier transform analysis of the Grow patent be useful in the claimed invention, much less the claimed invention of the present application. Furthermore, the Examiner's conclusory statements regarding a motivation to combine is not sufficient to establish a *prima facie* case of obviousness. Applicant, therefore, requests that the rejection be removed.

In view of the forgoing arguments, Applicant respectfully submits that the present case is now in condition for allowance. A Notice to that effect is requested.

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Respectfully submitted,



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